REMARKS

By this Amendment, claims 15 and 20 have been amended merely to expedite prosecution. Applicant does not, by this Amendment, intend to abandon subject matter of the claims as originally filed or later presented, and reserves the right to pursue such subject matter in a continuing application. No new matter has been added. Claims 1-13, 15, 16 and 18-26 are pending, of which claims 1-13, 18, 19, 23 and 24 are allowed. Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Applicant appreciates the allowance of claims 1-13, 18, 19, 23 and 24.

Applicant expresses appreciation for the courtesies extended by Examiner Nguyen to Applicant's representative, Jean-Paul Hoffman, during the various teleconferences conducted in April and May, 2009 (hereinafter the "Interview"). The substance of the Interview is incorporated into the remarks below and constitutes Applicant's record of the Interview.

Applicant has made the present claim amendments merely to advance the extremely lengthy prosecution in this case to a close. Applicant was disappointed that prosecution was re-opened by the Examiner after Applicant's Appeal Brief, essentially prolonging Applicant's ability to seek Board review of this case. Applicant still believes that the un-amended claims 15 and 20 (and its various dependent claims) were patentable over the cited references and would have proceeded to file another Appeal Brief if not for the expense and the likely delay in possible issuance of a patent from this application by taking that course of action. As discussed during the Interview, the Examiner is kindly requested to contact the Applicant immediately if the Examiner believes that the present claims are not found to be allowable so that Applicant may choose to reinstate the appeal by filing another Appeal Brief.

Claims 15-16, 20, 21, 25 and 26 were rejected under 35 U.S.C. § 103(a) based on European Patent Application Publication No. 1020897 to Tanaka (hereinafter "Tanaka") in view of U.S. Patent No. 6,533,952 to Klebanoff (hereinafter "Klebanoff"). The rejection is respectfully traversed.

Claim 15

Applicant respectfully submits that cited portions of Tanaka and Klebanoff, taken individually or in any proper combination, fail to disclose or render obvious a method of manufacturing a device using a lithographic projection apparatus comprising, *inter alia*, supplying a gaseous alcohol to a space in a radiation system of the lithographic projection apparatus, which space contains a mirror, wherein the alcohol forms a cap layer on said mirror, wherein, during the projecting, particles impinge the cap layer from a source other than the cap layer and the mirror and cause particles of the cap layer to be dislodged from the cap layer by sputtering, and wherein the gaseous alcohol is supplied to said space at a pressure sufficient to achieve a thickness of said cap layer which does not increase substantially over time, as recited in claim 15, whether, for example, the layer is a hydrocarbon layer, a carbon layer, or a combination thereof.[1]

The cited portions of Tanaka do not disclose, teach, or render obvious supply of a gaseous alcohol to a space. Further, the cited portions of Tanaka are silent as to particles impinging a cap layer from a source other than the cap layer and the mirror and causing particles of the cap layer to be dislodged from the cap layer by sputtering. And, accordingly, the cited portions of Tanaka are silent as to gaseous alcohol supplied to the space at a pressure sufficient to achieve a thickness of a cap layer which does not increase substantially over time.

Even assuming *arguendo* that the cited portions of Tanaka and Klebanoff are properly combinable (which Applicant does not concede at least for reasons discussed below), Applicant submits that the cited portions of Klebanoff fail to overcome the shortcomings of the cited portions of Tanaka. For example, like the cited portions of Tanaka, Applicant submits that the cited portions of Klebanoff fail to disclose or teach particles impinging a cap layer from a source other than the cap layer and the mirror and causing particles of the cap layer to be dislodged from the cap layer by sputtering. Further, Applicant submits that the cited portions of Klebanoff fail to disclose or teach, in the context of such sputtering, gaseous alcohol supplied to a space at a pressure sufficient to achieve a thickness of a cap layer which does not increase substantially over time, as recited in claim 15.

Sputtering

The Office Action alleged that the cited portions of Klebanoff disclose sputtering by incident radiation. However, there is no disclosure or teaching in the cited portions of Klebanoff

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[1] Applicant would like to clarify that the layer need not be a hydrocarbon layer and disclaims any prior statements or positions inconsistent therewith.

of particles impinging a cap layer from a source other than the cap layer and the mirror and causing particles of the cap layer to be dislodged from the cap layer by sputtering. The well-known technical term "sputtering" involves removing material due to bombardment of the material by energetic ions. In the claimed situation, particles impinge a cap layer on a mirror and cause particles from the cap layer to dislodged, essentially eroded, from the cap layer by the well-known technique of sputtering. See, e.g., paragraph [0024] of Applicant's specification ("... a cap layer on a mirror surface can be used to protect the mirror from sputtering damage caused by fast ions and atoms expelled from a plasma source... When the fast ions and atoms produced by the plasma hit the surface of the mirror, they contact the protective layer thereby dislodging the hydrocarbon molecules from the cap layer, and damage to the mirror surface itself is avoided.")

In contrast, the cited portions of Klebanoff merely disclose ejection of secondary electrons by high energy radiation, such as EUV radiation and disclose dissociation (a chemical process) caused by those electrons. See, e.g., col. 3, lines 57-59. In other words, the cited portions of Klebanoff appear to merely disclose impingement of a mirror by radiation, which causes electrons from that mirror to cause dissociation in water molecules. See, e.g., col. 3, lines 60-62. Thus, the cited portions of Klebanoff appear to fail to disclose or teach particles impinging a cap layer from a source other than the cap layer and the mirror. The referred to electrons of Klebanoff are from the mirror or a material on the mirror, which the Examiner has alleged to be the cap layer, not from a source other than the cap layer and the mirror. Moreover, the cited portions of Klebanoff appear to fail to disclose or teach impinging particles causing particles of the cap layer to be dislodged from the cap layer by sputtering. That is, even if the referred to electrons were impinging the cap layer as recited (which Applicant disputes as discussed above), the cited portions of Klebanoff appear merely to discuss the well-know technical process of "dissociation" rather than particles being dislodged by sputtering.

The Office Action appears to merely equate "sputtering" with the exposure of the mirror in Klebanoff with high energy radiation. See page 4 of the Office Action. Respectfully, Applicant submits that the Office Action has not established that the high energy radiation in Klebanoff causes particles of a cap layer on the mirror to be dislodged from the cap layer by sputtering. Indeed, the cited portions of Klebanoff merely disclose dissociation caused by the high energy radiation, and are silent as to sputtering. The two terms are just not synonymous and the Examiner is commended to review technical references to appreciate the differences between these basic scientific terms. As an example, optical elements are regularly impinged by high energy radiation but that does not mean that particles on the surfaces of those optical elements

are dislodged (eroded) by that radiation. For example, the radiation may not comprise particles of sufficient mass or energy to cause particles to be dislodged by the sputtering (i.e., the momentum transfer causing particles to be dislodged). Thus, the mirror is undamaged by the radiation. However, the radiation may have sufficient energy, as in Klebanoff, to cause the chemical dissociation of water on the mirror to constituent components of hydrogen and oxygen.

Thus, Applicant submits that the cited portions of Klebanoff are simply silent as to sputtering of anything, let alone the recited sputtering of the cap layer as recited in claim 15.

Control of Thickness of a Cap Layer

Applicant also submits that the cited portions of Klebanoff fail to disclose or teach, in the context of the recited sputtering, gaseous alcohol supplied to a space at a pressure sufficient to achieve a thickness of a cap layer which does not increase substantially over time, as recited in claim 15.

The Office Action alleged (see page 4 of the Office Action) that:

> [Klebanoff's disclosure of] *'Prior to exposing surface 210 to incident radiation, a small amount of a hydrocarbon gas that will also bind to surface 210 is admitted to the system' means that the binding of the hydrocarbon gas to the surface 210 forms a cap layer of hydrocarbon on the surface 210 before the cap layer is sputtered by the incident radiation. Moreover, because the sputtering will cause the hydrocarbon molecules bound to the surface 210 be dissociated, the thickness of the cap layer of hydrocarbon would not increase substantially over time. In addition, since the pressure gas is maintained at a certain value, the thickness of the hydrocarbon layer would not increase substantially over time due to the increase of the pressure gas*), wherein, in use, the layer of hydrocarbon is formed on the mirror by absorption of the gaseous hydrocarbon (*column 2, lines 14-16: 'Surface 110 has both hydrocarbon and water molecules adsorbed thereon'*)" (emphasis in original).

Applicant respectfully traverses this allegation as at least unsupported by the cited reference.

First, Applicant submits that there is no support in the cited portions of Klebanoff, nor does it necessarily result from the cited portions of Klebanoff, that there would be a cap layer as claimed. For example, Klebanoff warns against a graphitic carbon film and teaches to remove such a film. See, e.g., Klebanoff, col. 4, lines 8-21. Accordingly, even in the absence of sputtering, Klebanoff teaches against a cap layer. Further, there is no disclosure or teaching in the cited portions of Klebanoff that there would be a cap layer maintained in an environment of the recited sputtering. Rather, sputtering would remove any layer. See, e.g., paragraph [0023] of Applicant's specification ("...the cap layer is gradually destroyed by sputtering.") Accordingly, Applicant submits that there is no disclosure or teaching in the cited portions of Klebanoff of maintaining a cap layer in view of the recited sputtering, let alone of gaseous alcohol supplied to

a space at a pressure sufficient to achieve a thickness of a cap layer which does not increase substantially over time.

Further, the allegation that "since the pressure gas is maintained at a certain value, the thickness of the hydrocarbon layer would not increase substantially over time due to the increase of the pressure gas" is not supported by the cited portions of Klebanoff. All pressures and partial pressures disclosed by Klebanoff are filling pressures. Klebanoff is silent as to the allegation that "the pressure gas is maintained at a certain value." Even if *arguendo* the pressure of the gas in Klebanoff were maintained at a certain value, there is simply no disclosure of, nor would it necessarily result, that a constant pressure would ensure that a thickness of a cap layer would not increase substantially over time as alleged. For example, the cap layer could simply be removed by the sputtering leaving no cap layer. Thus, keeping the pressure constant may have no effect. Moreover, there is no disclosure, nor would it necessarily result, that an increasing pressure would cause increase of the thickness of a layer.

Thus, Applicant submits that the cited portions of Klebanoff are simply silent as to, in the context of sputtering, gaseous alcohol supplied to a space at a pressure sufficient to achieve a thickness of a cap layer which does not increase substantially over time, as recited in claim 15.

Improper Combination of Tanaka and Klebanoff

Applicant submits that a proper *prima facie* case of obviousness has not been established because the cited portions of Tanaka and Klebanoff are improperly combined. In particular, the cited portions of Klebanoff and Tanaka conflict, the proposed modification of the system described in the cited portions of Tanaka would render the Tanaka system unsatisfactory for its intended purpose, and a reasonable expectation of success for the proposed modification has not been set forth.

The Office Action essentially proposes that the inert gas disclosed in the cited portions of Tanaka may be supplemented with alcohol or else substituted with alcohol. Respectfully, this is contrary to the teachings regarding the system described in the cited portions of Tanaka. Such a combination or substitution would render the Tanaka system unsatisfactory for its intended purpose. In particular, the cited portions of Tanaka disclose the aim of having an optical system with hardly any ArF excimer laser light attenuation. See, e.g., Tanaka, para. [0008]. To that end, the cited portions of Tanaka disclose circulating inert gas through spaces in the optical system to improve transmittance by removing "foreign matter...such as water and hydrocarbons or other substances that diffuse the exposure light [, that] become adhered to the lenses 21 or suspended within the light path." See Tanaka, paras. [0045], [0088]. Therefore, the Office Action's

contention that Tanaka's system may be configured to add alcohol, which Tanaka characterizes as "foreign matter" that attenuates ArF laser light and which Tanaka expressly discloses removing through circulation of inert gas, simply flies in the face of Tanaka's teachings and the understanding of those skilled in the art. Indeed, Applicant submits that the cited portions of Tanaka expressly teach against supplying a hydrocarbon into the spaces in an optical system and thus cannot be combinable with any art that teaches such supply of a hydrocarbon into a space having an optical element.

Indeed, the cited portions of Klebanoff provide teachings that clearly conflict with Tanaka and that would render the modified Tanaka system unsatisfactory. Particularly, the cited portions of Klebanoff disclose supplying a hydrocarbon but in combination with the presence of water vapor and EUV radiation. See, e.g., Klebanoff, col. 3, lines 60 to col. 4, line 7. Moreover, the presence of such a hydrocarbon can lead to reduction in the reflectivity of mirror surfaces. See, e.g., Klebanoff, col. 4, lines 8-15. To help overcome this reduction of reflectivity, Klebanoff discloses providing oxygen containing gas. Thus, the cited portions of Klebanoff disclose providing hydrocarbon, water vapor and oxygen, each of which the cited portions of Tanaka expressly teach to keep out of the optical system to improve transmittance. Thus, the addition of alcohol in the Tanaka system directly conflicts with the teachings of Tanaka and would render the Tanaka system unsatisfactory for its intended purpose of having high transmittance.

Further, even if the proposed combination were otherwise proper, the Office Action has not shown a reasonable expectation of success for the proposed combination. The teachings of Klebanoff relate to high energy radiation, such as EUV radiation, while the teachings of Tanaka relate to relatively low energy radiation, i.e., ArF laser radiation. The Office Action has not established, based on evidence of record, that the introduction of a hydrocarbon as taught by Klebanoff would be effective in the ArF system described in the cited portions of Tanaka and the Office Action has not made the appropriate showing that there would be a reasonable expectation of success.

Claim 20

Applicant respectfully submits that cited portions of Tanaka and Klebanoff, taken individually or in any proper combination, fail to disclose or render obvious a lithographic projection apparatus comprising, *inter alia*, a gas supply configured to supply a gaseous hydrocarbon to a space containing a mirror; and a gas supply control configured to control supply of the gaseous hydrocarbon to the space to maintain a layer formed on the mirror using

the gaseous hydrocarbon at a substantially constant thickness in response to, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror, as recited in claim 20, whether, for example, the layer is a hydrocarbon layer, a carbon layer, or a combination thereof.[2]

The cited portions of Tanaka do not disclose, teach, or render obvious a gas supply configured to supply a gaseous hydrocarbon to a space. Further, the cited portions of Tanaka are silent as to particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror. And, accordingly, the cited portions of Tanaka are silent as to a gas supply control configured to control supply of the gaseous hydrocarbon to the space to maintain a layer formed on the mirror using the gaseous hydrocarbon at a substantially constant thickness in response to, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror.

Even assuming *arguendo* that the cited portions of Tanaka and Klebanoff are properly combinable (which Applicant does not concede at least for reasons discussed below), Applicant submits that the cited portions of Klebanoff fail to overcome the shortcomings of the cited portions of Tanaka. For example, like the cited portions of Tanaka, Applicant submits that the cited portions of Klebanoff fail to disclose or teach particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror. Further, Applicant submits that the cited portions of Klebanoff fail to disclose or teach a gas supply control configured to control supply of the gaseous hydrocarbon to the space to maintain a layer formed on the mirror using the gaseous hydrocarbon at a substantially constant thickness in response to, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror, as recited in claim 20.

Sputtering

The Office Action alleged that the cited portions of Klebanoff disclose sputtering by incident radiation. However, there is no disclosure or teaching in the cited portions of Klebanoff of particles of the cap layer being dislodged from the cap layer by sputtering caused by particles

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[2] Applicant would like to clarify that the layer need not be a hydrocarbon layer and disclaims any prior statements or positions inconsistent therewith.

impinging the cap layer from a source other than the cap layer and the mirror. The well-known technical term "sputtering" involves removing material due to bombardment of the material by energetic ions. In the claimed situation, particles impinge a cap layer on a mirror and cause particles from the cap layer to dislodged, essentially eroded, from the cap layer by the well-known technique of sputtering. See, e.g., paragraph [0024] of Applicant's specification ("... a cap layer on a mirror surface can be used to protect the mirror from sputtering damage caused by fast ions and atoms expelled from a plasma source... When the fast ions and atoms produced by the plasma hit the surface of the mirror, they contact the protective layer thereby dislodging the hydrocarbon molecules from the cap layer, and damage to the mirror surface itself is avoided.")

In contrast, the cited portions of Klebanoff merely disclose ejection of secondary electrons by high energy radiation, such as EUV radiation and disclose dissociation (a chemical process) caused by those electrons. See, e.g., col. 3, lines 57-59. In other words, the cited portions of Klebanoff appear to merely disclose impingement of a mirror by radiation, which causes electrons from that mirror to cause dissociation in water molecules. See, e.g., col. 3, lines 60-62. Thus, the cited portions of Klebanoff appear to fail to disclose or teach particles impinging a cap layer from a source other than the cap layer and the mirror. The referred to electrons of Klebanoff are from the mirror or a material on the mirror, which the Examiner has alleged to be the cap layer, not from a source other than the cap layer and the mirror. Moreover, the cited portions of Klebanoff appear to fail to disclose or teach particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer. That is, even if the referred to electrons were impinging the cap layer as recited (which Applicant disputes as discussed above), the cited portions of Klebanoff appear merely to discuss the well-know technical process of "dissociation" rather than particles being dislodged by sputtering.

The Office Action appears to merely equate "sputtering" with the exposure of the mirror in Klebanoff with high energy radiation. See page 4 of the Office Action. Respectfully, Applicant submits that the Office Action has not established that the high energy radiation in Klebanoff causes particles of a cap layer on the mirror to be dislodged from the cap layer by sputtering. Indeed, the cited portions of Klebanoff merely disclose dissociation caused by the high energy radiation, and are silent as to sputtering. The two terms are just not synonymous and the Examiner is commended to review technical references to appreciate the differences between these basic scientific terms. As an example, optical elements are regularly impinged by high energy radiation but that does not mean that particles on the surfaces of those optical elements are dislodged (eroded) by that radiation. For example, the radiation may not comprise particles of sufficient mass or energy to cause particles to be dislodged by the sputtering (i.e., the

momentum transfer causing particles to be dislodged). Thus, the mirror is undamaged by the radiation. However, the radiation may have sufficient energy, as in Klebanoff, to cause the chemical dissociation of water on the mirror to constituent components of hydrogen and oxygen.

Thus, Applicant submits that the cited portions of Klebanoff are simply silent as to sputtering of anything, let alone the recited sputtering of the cap layer as recited in claim 20.

Gas Supply Control

Applicant also submits that the cited portions of Klebanoff fail to disclose or teach a gas supply control configured to control supply of the gaseous hydrocarbon to the space to maintain a layer formed on the mirror using the gaseous hydrocarbon at a substantially constant thickness in response, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror, as recited in claim 20.

The Office Action alleged (see page 4 of the Office Action) that:

> [Klebanoff's disclosure of] *'Prior to exposing surface 210 to incident radiation, a small amount of a hydrocarbon gas that will also bind to surface 210 is admitted to the system' means that the binding of the hydrocarbon gas to the surface 210 forms a cap layer of hydrocarbon on the surface 210 before the cap layer is sputtered by the incident radiation. Moreover, because the sputtering will cause the hydrocarbon molecules bound to the surface 210 be dissociated, the thickness of the cap layer of hydrocarbon would not increase substantially over time. In addition, since the pressure gas is maintained at a certain value, the thickness of the hydrocarbon layer would not increase substantially over time due to the increase of the pressure gas*), wherein, in use, the layer of hydrocarbon is formed on the mirror by absorption of the gaseous hydrocarbon (*column 2, lines 14-16: 'Surface 110 has both hydrocarbon and water molecules adsorbed thereon'*)" (emphasis in original).

Applicant respectfully traverses this allegation as at least unsupported by the cited reference.

First, Applicant submits that there is no support in the cited portions of Klebanoff, nor does it necessarily result from the cited portions of Klebanoff, that there would be a layer formed on the mirror using the gaseous hydrocarbon as claimed. For example, Klebanoff warns against a graphitic carbon film and teaches to remove such a film. See, e.g., Klebanoff, col. 4, lines 8-21. Accordingly, even in the absence of sputtering, Klebanoff teaches against a layer formed on the mirror using the gaseous hydrocarbon. Further, there is no disclosure or teaching in the cited portions of Klebanoff that there would be such a layer maintained in an environment of the recited sputtering. Rather, sputtering would remove any layer. See, e.g., paragraph [0023] of Applicant's specification ("...the cap layer is gradually destroyed by sputtering.") Accordingly, Applicant submits that there is no disclosure or teaching in the cited portions of Klebanoff of control of the supply of gaseous hydrocarbon to maintain a layer formed on the

mirror using the gaseous hydrocarbon at a substantially constant thickness in response to, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror.

Further, the allegation that "since the pressure gas is maintained at a certain value, the thickness of the hydrocarbon layer would not increase substantially over time due to the increase of the pressure gas" is not supported by the cited portions of Klebanoff. All pressures and partial pressures disclosed by Klebanoff are filling pressures. Klebanoff is silent as to the allegation that "the pressure gas is maintained at a certain value." Even if *arguendo* the pressure of the gas in Klebanoff were maintained at a certain value, there is simply no disclosure of, nor would it necessarily result, that a constant pressure would ensure that a thickness of a layer formed on a mirror using gaseous hydrocarbon would not increase substantially over time as alleged. For example, the layer could simply be removed by the sputtering leaving no layer. Thus, keeping the pressure constant may have no effect. Moreover, there is no disclosure, nor would it necessarily result, that an increasing pressure would cause increase of the thickness of a layer.

Thus, Applicant submits that the cited portions of Klebanoff are simply silent as to a gas supply control configured to control supply of the gaseous hydrocarbon to the space to maintain a layer formed on the mirror using the gaseous hydrocarbon at a substantially constant thickness in response to, during supply of the projection beam, particles of the cap layer being dislodged from the cap layer by sputtering caused by particles impinging the cap layer from a source other than the cap layer and the mirror, as recited in claim 20.

Improper Combination of Tanaka and Klebanoff

Applicant submits that a proper *prima facie* case of obviousness has not been established because the cited portions of Tanaka and Klebanoff are improperly combined. In particular, the cited portions of Klebanoff and Tanaka conflict, the proposed modification of the system described in the cited portions of Tanaka would render the Tanaka system unsatisfactory for its intended purpose, and a reasonable expectation of success for the proposed modification has not been set forth.

The Office Action essentially proposes that the inert gas disclosed in the cited portions of Tanaka may be supplemented with hydrocarbon or else substituted with hydrocarbon. Respectfully, this is contrary to the teachings regarding the system described in the cited portions of Tanaka. Such a combination or substitution would render the Tanaka system unsatisfactory for its intended purpose. In particular, the cited portions of Tanaka disclose the

aim of having an optical system with hardly any ArF excimer laser light attenuation. See, e.g., Tanaka, para. [0008]. To that end, the cited portions of Tanaka disclose circulating inert gas through spaces in the optical system to improve transmittance by removing "foreign matter...such as water and hydrocarbons or other substances that diffuse the exposure light [, that] become adhered to the lenses 21 or suspended within the light path." See Tanaka, paras. [0045], [0088]. Therefore, the Office Action's contention that Tanaka's system may be configured to add hydrocarbon, which Tanaka characterizes as "foreign matter" that attenuates ArF laser light and which Tanaka expressly discloses removing through circulation of inert gas, simply flies in the face of Tanaka's teachings and the understanding of those skilled in the art. Indeed, Applicant submits that the cited portions of Tanaka expressly teach against supplying a hydrocarbon into the spaces in an optical system and thus cannot be combinable with any art that teaches such supply of a hydrocarbon into a space having an optical element.

Indeed, the cited portions of Klebanoff provide teachings that clearly conflict with Tanaka and that would render the modified Tanaka system unsatisfactory. Particularly, the cited portions of Klebanoff disclose supplying a hydrocarbon but in combination with the presence of water vapor and EUV radiation. See, e.g., Klebanoff, col. 3, lines 60 to col. 4, line 7. Moreover, the presence of such a hydrocarbon can lead to reduction in the reflectivity of mirror surfaces. See, e.g., Klebanoff, col. 4, lines 8-15. To help overcome this reduction of reflectivity, Klebanoff discloses providing oxygen containing gas. Thus, the cited portions of Klebanoff disclose providing hydrocarbon, water vapor and oxygen, each of which the cited portions of Tanaka expressly teach to keep out of the optical system to improve transmittance. Thus, the addition of hydrocarbon in the Tanaka system directly conflicts with the teachings of Tanaka and would render the Tanaka system unsatisfactory for its intended purpose of having high transmittance.

Further, even if the proposed combination were otherwise proper, the Office Action has not shown a reasonable expectation of success for the proposed combination. The teachings of Klebanoff relate to high energy radiation, such as EUV radiation, while the teachings of Tanaka relate to relatively low energy radiation, i.e., ArF laser radiation. The Office Action has not established, based on evidence of record, that the introduction of a hydrocarbon as taught by Klebanoff would be effective in the ArF system described in the cited portions of Tanaka and the Office Action has not made the appropriate showing that there would be a reasonable expectation of success.

Consequently, as the cited portions of Tanaka and Klebanoff fail to disclose or render obvious each and every element of claims 15 and 20, the cited portions of Tanaka and Klebanoff cannot render obvious claims 15 or 20 under 35 U.S.C. § 103(a). Therefore, reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claims 15 and 20 based on Tanaka in view of Klebanoff are respectfully requested. Furthermore, as claims 16 and 25, depend from claim 15, and claims 21 and 26 depend from claim 20, reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 16, 21, 25 and 26 based on Tanaka in view of Klebanoff are respectfully requested at least by virtue of their respective dependency as well as for the additional recitations therein.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 03-3975 under Order No. 081468/282980. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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